Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Draft Conditional Major, Construction / Operating
Permit: F-07-030
Kentucky State Capitol Campus Utility Operation
Frankfort, KY 40601
May 15, 2007
Prathap John, Reviewer

SOURCE ID:	21-073-00085
AGENCY INTEREST:	85158
ACTIVITY:	APE20070001

SOURCE DESCRIPTION:

The Division for Air Quality received an initial application from the Department for Facilities and Support Services (Kentucky State Capitol) for an initial state permit on May 3, 2007. However, based on the evaluation of potential to emit calculations, emissions of nitrogen oxide (NOx) and sulfur dioxide (SO_2)exceeded one hundred tons per year, and that triggers the applicability of 401 KAR 52:020-Title V requirements. Upon discussions with the permittee, it was established that utilization of the back up fuel for all the natural gas boilers might not exceed a third of the year or 229,300 gallons per year. Hence the facility can limit the emissions of NOx and SO_2 to less than 90 tons per year on any consecutive twelve months total, to preclude the applicability of 401 KAR 52:020 and be permitted as Federally Enforceable/Conditional (401 KAR 52:030) Major source.

Kentucky State Capitol campus utility operation provides utility services to the Commonwealth of Kentucky Capitol Complex, including the Capitol and Capitol Annex. The current utility operation includes two large natural gas boilers (rated at 31.5 and 38.5 MMBtu/hr) each with fuel oil as a backup; two small natural gas boilers rated at 3.17 MMBtu/hr each and one emergency generator rated at 970 KW.

The facility wishes to replace the two large boilers (rated at 31.5 and 38.5 MMBtu/hr) with four smaller natural gas boilers (12.3 MMBtu each). The new natural gas boilers will be purchased with Low-NOx burners in the spring of 2008. The Kentucky State Capitol Campus utility operation also plans to replace the current emergency generator with two new generators in the fall of 2007. Each of the calculations were done using the diesel emission factors (AP-42) for the worst case scenario.

APPLICABLE REGULATIONS:

401 KAR 59:015, New Indirect Heat Exchangers applicable to an emission unit with a capacity less than 250 MMBtu per hour and commenced on or after April 9, 1972

401 KAR 60:005, incorporating by reference 40 CFR 60 Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, applicable to an emission unit with a design maximum heat input capacity of 100 MMBtu/hr or less and greater than or equal to 10 MMBtu/hr and constructed after June 9, 1989.

40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal

Combustion Engines (CI ICE), commencing construction (order placed date) after July 11, 2005 and manufactured after April 1, 2006

401 KAR 61:015, Existing Indirect Heat Exchangers applicable to an emission unit with a capacity less than 250 MMBtu per hour and commenced before April 9, 1972.

NON APPLICABLE REGULATIONS:

40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Institutional, Commercial, and Industrial Boilers and Process Heaters; applicability date of September 13, 2007. Permittee is not a major source of hazardous air pollutants

COMMENTS:

EU 01- 31.5 MMBtu/hr & EU 02- 38 MMBtu/hr-existing indirect heat exchangers—1951& 1957

Pursuant to 401 KAR 61:015, Section 4(1), particulate emissions shall not exceed 0.48 lb/MMBtu each, based on a three-hour average.

Pursuant to 401 KAR 61:015, Section 4(3), emissions shall not exceed 40 percent opacity on a six-minute average.

Pursuant to 401 KAR 61:015, Section 5(1), sulfur dioxide emission shall not exceed 4.7 lb/MMBtu each, based on a twenty-four-hour average.

Pursuant to 401 KAR 61:015, Section 4(3)(c), for emissions shall not exceed 40 % opacity based on a six minute average, except for emissions from an indirect heat exchanger during building a new fire for the period required to bring the boiler up to operating condition provided the method used is the recommended by the manufacturer and the time does not exceed the manufacturer's recommendation.

EU 03,04,05& 06- (12.3 MMBtu/hr each)- Indirect heat exchangers-expected installation 2008

Pursuant to 401 KAR 59:015 Section 4(1)(c), particulate emissions from each unit shall not exceed 0.31 lb/MMBtu based on a three-hour average.

Pursuant to 401 KAR 59:015, Section 4(2), emissions shall not exceed 20 percent opacity based on a six-minute average, except a maximum of 40 percent opacity shall be permissible for not more than 6 consecutive minutes in any 60 consecutive minutes during cleaning the fire box or blowing soot.

Pursuant to 401 KAR 59:015, Section 4(2)(c), emissions from an indirect heat exchanger shall not exceed 20 percent opacity based on a six minute average except during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015 Section 5(1)(c), sulfur dioxide emissions from each unit shall not exceed 1.06 lb/MMBtu based on a three-hour average, while burning natural gas

Pursuant to 401 KAR 60:005, incorporating by reference 40 CFR 60.43c (d), the PM and Opacity

standards apply at all times except during periods of startup, shutdown, or malfunction.

Pursuant to 401 KAR 60:005, incorporating by reference 40 CFR 60.42c (d), sulfur dioxide emissions shall not exceed 0.50 lb/MMBtu actual heat input each based on a 30-day rolling average; or, as an alternative, the permittee shall not combust oil that contains greater than 0.5 weight percent sulfur

Pursuant to 401 KAR 60:005, incorporating by reference 40 CFR 60.42c (i), the sulfur dioxide emission limits and fuel oil sulfur limits under this subsection apply at all times, including, periods of startup, shutdown, and malfunction

Compliance with the particulate and sulfur dioxide standard is assured while burning natural gas

EU 07----(EG 01- 930 KW) – Existing Diesel Fired Generator
401 KAR 52:030, Federally Enforceable Conditional Major Permits

EU 08 & 09-----(EG 02&03- 1250 KW each) – New Diesel Fired Generators
Pursuant to 40 CFR 60.4207 (a), beginning October 1, 2007, the permittee shall only use diesel fuel that meets the requirements of 40 CFR 80.510(a).

Pursuant to 40 CFR 60.4207 (a), beginning October 1, 2010, the permittee shall only use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel

Pursuant to 40 CFR 60.4205(b) and 40 CFR 60.4202 (a)(2), owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder, with a maximum engine power greater than or equal to 37 KW (50HP), and less than or equal to 2,237 KW (3,000 HP), must comply with the certification emission standards for new non-road CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants.

Pursuant to 40 CFR 60.4206, to assure compliance with the emission standards, owners and operators of stationary CI ICE must operate and maintain stationary CI ICE according to the manufacturer’s written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

EU 10-11---- (3.5 MMBtu/hr each)- Existing indirect heat exchangers - 1990

Pursuant to 401 KAR 59:015 Section 4(1)(c), Particulate emissions from each unit shall not exceed 0.31 lb/MMBtu, each based on a three-hour average.

Pursuant to 401 KAR 59:015, Section 4(2), emissions shall not exceed 20 percent opacity based on a six-minute average, except a maximum of 40 percent opacity shall be permissible for not more than 6 consecutive minutes in any 60 consecutive minutes during cleaning the fire box or blowing soot.

Pursuant to 401 KAR 59:015, Section 4(2)(c), emissions from an indirect heat exchanger shall not exceed 20 percent opacity based on a six minute average except during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015 Section 5(1)(c), sulfur dioxide emissions from each unit shall not

exceed 1.30 lb/MMBtu, each based on a three-hour average.

Compliance with the particulate and sulfur dioxide standard is assured while burning natural gas

EMISSION AND OPERATING CAPS DESCRIPTION:
To preclude the applicability of 401 KAR 52:020, emissions of any regulated air pollutant shall not exceed 90 tons per year on any consecutive twelve months. The total source wide usage of #2 fuel oil shall not exceed 229,300 gallons per year.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.